oxide manufacturing, and lead reclamation areas. Secondary containment/diversion generally consisted of the concrete floor (some floors were also covered with acid resistant brick) as well as trenches and drains. Other areas within the Main Production Building included the former hazardous waste storage room, boiler room, tool room offices, machine shop and locker rooms.

Underlying the floors was a system of sewers and process water drain lines. Generally, the floor drains and trench drains were part of the process sewer system. In the wet finishing areas, the acid was collected in a separate trench system and recycled. In the case and cover molding areas, the used hydraulic oil was collected in a trench drain and sump that surrounded each molding machine. The oil collected in the sumps was pumped out on a regular basis and discharged to an associated oil recovery system that included a used oil aboveground storage tank (AST), and previously USTs located on the west portion of the site.

The AOIs identified at the Site, the potential Site-related chemicals associated with each and observations made at each of the AOIs identified are listed in Table 1 and locations shown on Figure 2.

3.3 Manufacturing Processes

The battery manufacturing process included melting and reforming lead by heat treating and cooling. The plant received the lead from an outside source. The lead was melted and reformed into strips that were rolled into coils. The coils were heated and pressed into plates, which were covered with paste consisting of red lead (lead oxide), sulfuric acid, and water. The plates were heated in a humidity oven or steam oven, grouped and (as appropriate) wrapped in plastic, and placed into battery cases, which were also manufactured on-site. The batteries were filled with acid, charged for 8 hours, emptied of initial acid, and refilled with fresh acid. The batteries were then sealed and stored on pallets for delivery to customers.

On-site operations included lead oxide processing, lead processing for lead plate manufacture, plastic injection molding of battery cases and covers, lead paste plate coating and curing, lead plate encapsulation, battery assembly with welded posts (cast on strap), heat sealing of batteries, acid mixing, battery wet finishing and charging, labeling, palletizing for shipment, and autopsy of defective batteries. Operations also included lead reclamation until the mid-1980s. Attendant support services included tool repair and manufacture, quality control, engineering, warehousing, maintenance and utility services, wastewater pretreatment, stormwater treatment, and employee services.

3.3.1 Lead Tetraoxide Manufacturing

Lead oxide was formed when air was moved through molten lead with agitation in oxide reactors located on the west side of the Main Production Building toward the north half of the building . From the oxide reactor, the lead oxide went to a settling chamber and to a storage hopper. The lead oxide was ground to particle size and sent through a cyclone collector and bag house, located on the west side of the Main Production Building, where lead oxide dust was collected. Bag houses provided down-draft ventilation. Air scrubbers cleaned the air of lead.

3.3.2 Lead Plate Manufacturing

The manufacture of lead acid batteries began with the manufacture of lead plates. This process involved melting of lead pigs or hogs (a pig equals 35 pounds of lead; a hog equals 1 ton), forming strips, and coiling the strips. Soluble oil (2 percent oil, 98 percent water) was used to lubricate the lead as it was rolled to a specified thickness depending on whether it was to be used for a negative or positive plate. The lead was then trimmed to a specified width (scraps were remelted). After the lead strip cooled and hardened, it was perforated. Soluble oil was used again as the lead was pressed and expanded to form a grid. The lead grid strip was cut into rectangular plates and lead oxide paste was applied (see materials used in process). Negative plates were stored to dry. Positive plates were exposed to 212 degree Fahrenheit steam to properly cure in a steam oven in the center of the Main Production Building.

3.3.3 Plate Pasting

To make the lead oxide plate paste, the lead oxide was mixed with sulfuric acid and water and diluted to 50 percent concentration to form a paste that was 10 percent lead sulfate and 90 percent lead oxide. The lead oxide paste was spread on the lead grid strips in the plate pasting area in the north-center part of the Main Production Building. Process water from plate pasting operations was collected in a clarifier located south of the plate pasting area. Negative plates were stored to dry. Positive plates were exposed to 212 degree Fahrenheit steam to properly cure in a steam oven located in the center of the Main Production Building. The plate pasting area is shown on Figure 2.

3.3.4 COS

The cast on strap (COS) process involved polyethylene envelopes used to separate the negative and positive plates and form group cells. Lead straps and terminal posts were formed at the COS lead pot, attached to the plate lugs, and dropped into battery containers. The intermediate straps were welded through the container wall to pass the electrical current from cell to cell. The cast on strap process area was located in the southeast part of the Main Production Building as shown on Figure 2

3.3.5 Plastic Molding Process

The plastic injection molding process used plastic rolling machines to form the battery cases and covers. The use of these hydraulic molding units generated used hydraulic oil. The plastic molding machines were located on the west side of the Main Production Building near the center as shown on Figure 2.

3.3.6 Charging

During final assembly, the plates and lead battery terminals were placed into the plastic battery cases (made on-site), and sulfuric acid was added to the battery in the southeast corner of the Main Production Building. A plastic separator (purchased from an outside manufacturer) was used to allow the sulfuric acid to penetrate the plates while preventing the positive and negative plates from touching each other. Once assembled, the batteries were charged in the formation department (Old Charge Area) on the south end of the Main Production Building and in the "New Charge Building" located south of the Main Production Building as shown on Figure 2.

3.3.7 Labeling

After charging, batteries were labeled in the "Final Finish" area located most recently in the southwest part of the southern building. Labels were applied and the batteries were placed upon pallets for shipping using a hydraulic palletizer located in the northwest corner of the New Charge Building. The final finish labeling and palletizer areas are shown on Figure 2.

3.3.8 Autopsy Process

In addition, as part of its quality control program, the facility performed battery autopsies and testing of defective batteries since 1954. Approximately 20 failed batteries under warranty were received from customers per month.

During the battery autopsies, batteries were placed on a polyvinyl chloride (PVC)-coated workbench, the tops were cut off, and the acid was drained into a PVC-lined sink which drained to the wastewater treatment system. Acid was flushed from the batteries with water. The plastic battery tops were then banded back in place, and the batteries were stored on wooden pallets prior to shipment off-site. This process was performed in the southwest part of the Main Production Building in the battery tear-down area shown as SWMU No. 8. Defective batteries were stored on the west side of the Main Production Building at SWMU No. 11 and in the northwest field area at SWMU No. 12. The processing and storage areas are shown on Figure 2.

3.3.9 Process Cooling Water

During the manufacturing process, several components were cooled with water, creating wastewater containing lead, oil, or sulfuric acid. The dilution of sulfuric acid generated heat. Heat was removed by a heat exchanger, and water in the heat exchanger was sent to a cooling tower. The lead strip was also cooled with a heat exchanger. The hot water from the heat exchanger was sent to cooling towers located on the east part of the north side of the Main Production Building. After forming, plastic cases were cooled with water which was then sent to cooling towers on the southern end of the west side of the Main Production Building. The two cooling tower locations are shown on Figure 2.

3.3.10 Wastewater Processing

Wastewater from the Main Production Building was collected in a 25-foot by 30-foot by 20-foot deep holding basin located on the southeast part of the Site where caustic soda (sodium hydroxide) was added to neutralize the acid in the wastewater and to cause the lead to become insoluble. The neutralization process was as follows: Process water entered the neutralization system via the primary holding pit and passed through the two remaining sub-basins where in the third sub-basin sodium hydroxide was added to neutralize the acid in the wastewater and to cause the lead to become insoluble. Water was then filtered through rubber-lined cast iron units with stainless steel filter coated with diatomaceous earth. The filtered water was monitored for pH and lead before being discharged to the sewer. This process was used up until about 1992, when a Lamella clarifier, moving bed sand filter, and sludge dewatering filter press were added, replacing the diatomaceous earth filter. Waste water basin was located adjacent to the east side of the southern building and the process water treatment area was located inside the Southern Building as shown on Figure 2.

3.4 Regulatory History

According to Delphi representatives, no government agent or third party has asserted a claim of on-site treatment, storage or disposal liability against the Site. Delphi representatives indicated that it has not defended any environmental related claims or litigation asserted by any governmental agency or third party related to this Site, and no potential claims or litigation cases are presently known to exist.

Several regulated units were previously located on site. These included SWMUs that included a waste water treatment system, underground storage tanks (USTs) and above ground storage tanks (ASTs) and several hazardous waste storage areas. Presently, with the exception of the wastewater treatment unit (WWTU) basin, all known underground and aboveground tanks used for storage of chemicals, fuel or waste in the treatment process have been cleaned and removed under the oversight of the County of Orange. The primary WWTU basin and weir chambers still require the removal of wastewater and sludges, decontamination, and structure removal. A separate closure plan has been prepared for closure of the WWTU as required by the DTSC (Haley & Aldrich, 2006).

During site demolition, closure of the wastewater treatment unit (WWTU) initially commenced pursuant to the requirements for a permit-by-rule (PBR) unit and a closure plan that was approved by the Certified Unified Program Agency (CUPA). However, in February 1991, Delphi's predecessor, General Motors, submitted a Resource Conservation and Recovery Act (RCRA) Part A application for the WWTU to the US EPA, Region IX. According to DTSC, the WWTU unit is technically an Interim Status Unit that is subject to the formal closure requirements of fully permitted treatment units and may require environmental site assessment and, if significant contamination is found, remediation as part of the unit closure activities. However, during demolition, the secondary treatment system portion of the WWTU was cleaned and removed in accordance with a PBR closure plan that was approved by the local Certified Unified Program Agency (CUPA). Subsequently due to the permit issues discovered, the DTSC suspended closure activities of the WWTU during demolition until this issue was resolved.

To complete closure in accordance with regulatory requirements, Haley & Aldrich prepared a closure plan for the WWTU which was subsequently submitted to the DTSC in July 2006. As part of this FI, several borings were advanced around the WWTU and there findings are presented later in this report. The WWTU will be removed in accordance with the closure plan, when approved by DTSC, and when site demolition resumes. Upon completion of WWTU closure activities a closure documentation report will be prepared and submitted to DTSC.

The Closure Plan was prepared in accordance with the closure requirements for Interim Status Facilities in 22 CCR, Division 4.5, Chapter 15, and is consistent with the Department of Toxic Substances Control's Permit Writer Instructions for Closure of Treatment and Storage Facilities - Revision 1, January 1994. The activities contained in the closure plan are designed to meet the Closure Performance Standards prescribed in 22 CCR, Section 66265.111 and to achieve closure of the WWTU pursuant to facility closure requirements for Interim Status Facilities in 22 CCR, Division 4.5, Chapter 15, by demonstrating that hazardous waste and hazardous constituent residues have been removed or are left in place at levels that are protective of public health and the environment. At the conclusion of the establishment of the agreed-to remedial or monitoring activities, DTSC will issue a no further action letter and all PBR and RCRA Part A issues will be deemed closed.

3.5 Waste Generation

Wastes were generated at the Site during the manufacture of lead acid batteries, during maintenance of manufacturing equipment, while testing defective batteries, and in the treatment of wastewater.

3.6 Waste Management

The Site managed its waste through four general waste streams:

- Solid wastes containing solid lead were transported to an off-site secondary lead smelter for lead reclamation;
- Wastewater containing dissolved lead and acid was treated in the on-site WWTU;
- Spent diatomaceous earth from the WWTU filters was disposed of at a Class I landfill; and
- Wastewater containing oil was shipped to an oil recycler.

Previous management of waste generated at the Site can be divided into waste collection areas, accumulated material storage areas, and regulated discharges. The following three subsections (3.61, 3.62 and 3.63) were derived from the Ecology and Environment, Inc. (1992) *Preliminary Assessment* document and PRC Environmental Management, Inc. (1992) *Visual Site Inspection/Sampling Visit* included in Appendix A.

3.6.1 Waste Collection and Pure Product Areas

50-gallon Steel Buckets: Lead dross and scrap lead were collected in containers at satellite accumulation points near the strip milling machines on the north end of the Main Production Building. When full, the containers were removed and stored within an indoor staging area.

55-gallon Containers: Lead slurry and defective battery plates were collected in 55-gallon containers at satellite collection points near the plate pasting machines before being stored within an indoor staging area.

Plastic-lined Cardboard Boxes / 1 Cubic Yard Metal Containers: Reclaimed lead (including off-specification plates) was collected in the above referenced containers and sent to an off-site smelter.

Concrete Channel: Waste lead oxide slurry, generated from the pasting operation, was washed into a concrete channel which led to the "1983 Vacuum Filter Machine."

1983 Vacuum Filter Machine: This vacuum filter machine was used to spread the lead oxide slurry on a sheet of filter paper by applying a vacuum to the underside of the paper to extract water from the slurry. This wastewater was sent to the WWTU to be treated and to precipitate the dissolved lead. The lead oxide residue and filter paper were put in open containers for further air drying and then were sent to the hazardous waste storage area (permitted for 90 days) for temporary storage.

Bag house: Lead dust from plate heating was collected in a bag house. The bag house was periodically emptied, and the dust containing lead was stored in 55-gallon containers in the reclaim room.

Storage Tanks: Outside storage tanks historically included ASTS and USTs. ASTs included three 8,500-gallon pure acid tanks, two 6,000-gallon acid reclaim tanks, one 7,000-gallon karbated acid tank (where the acid is diluted), two 180,000-pound tanks containing polypropylene beads for casing manufacturing, one 6,000-gallon tank of used oil, one 1,500-gallon oxygen storage tank, and one 511-gallon argon tank.

Historically the site had at least three known UST areas. These include four 19,000-gallon fuel oil USTs (SWMU No. 13) located on the north side of the northwest corner of the Main Production Building. Two USTs used to store used oil were located west of the Main Production Building (SWMU No 7). These USTs originally contained sodium hydroxide. One 500-gallon gasoline UST was located north of the northwest corner of the Main Production Building, just west of the railroad tracks. All of the USTs were removed and closed under oversight of the local agencies, Orange County Health Care Agency (OCHCA) and the Anaheim Fire Department.

Hydraulic Oil Collection Channels: Epoxy-coated concrete collection channels surrounded the plastic battery case molding units. These "blind" channels contained water and hydraulic oil resulting from any leakage from the hydraulic molding machines.

Battery Autopsy Area: In this area, defective batteries were cut open, the acid was drained, and batteries were tested to determine the reason for failure. The floor in this area was constructed of 12-inch thick concrete and sealed with protective epoxy coating. Secondary containment was provided by the sloped concrete floor which directed the waste fluids into a sump which was piped to the WWTU. Lead and plastic were reclaimed and acid was collected and recycled.

Indoor Sodium Hydroxide Tank: The 5,600-gallon sodium hydroxide storage tank was located over an epoxy-coated concrete sump with no drains. Periodically, the material in the sump was pumped to the WWTU for reuse to for adjust pH of the waste water.

3.6.2 Accumulated Material Storage Areas

Hazardous Waste Storage Areas: Historically, four hazardous waste storage areas are know to have existed.

- A former hazardous waste storage area was identified in the room in the northwest corner of the Main Production Building;
- Near the southwest corner of Warehouse Number 3;
- More recently, located inside Warehouse No. 3, along the east wall; and
- In a small outdoor shed located northwest of the northwest corner of the Main Production Building.

The area stored empty, unused drums as well as 55-gallon drums that contained virgin materials such as acids and wastes.

Collection/Processing Tanks: Soluble oil wastewater from processing was collected in four 120-gallon tanks which were located on a concrete slab inside of the Main Production Building (SWMU No, 9). Water was drained through a sump at the Oil Pump House (SWMU No.1) to the WWTU. Prior to construction of this oil pump house, one was located north of the northeast corner of Warehouse No. 3. The used oil was pumped to above ground tanks and taken off-site by an outside vendor.

Wash Down of Equipment: Oil-contaminated wastewater from equipment wash down was collected in a 6,000-gallon tank (refer to Section 3.6.1). The facility typically generated approximately 5,000 gallons of oily wastewater per month. Known wash down areas were located north of the northwest corner of the Main Production Building and east of the northeast corner of the South Building.

Outside Wooden Pallets: Defective batteries from the final assembly process were loaded on pallets and stored in an area between the Main Production Building and the warehouse. After the used batteries were evaluated in the battery autopsy area, they were resealed and stored with other defective batteries in an area west of the Main Production Building, south of the Oil Pump House to await off-site disposal.

Indoor Gondola Bin and Roll-off Bins: Secondary containment around the filter press and indoor gondola bin was provided by an epoxy-coated, concrete floor sloped to drain back into the wastewater treatment system. The roll-off bins were located in an outside area believed to be just north of Warehouse No. 3. The roll-off bins were plastic-lined and may also have contained other lead-impacted material, gloves, and lead-contaminated clothing. Used diatomaceous earth was handled by placement into an indoor gondola bin that was periodically dumped into two 20-cubic-yard, covered roll-off bins. An estimated average of 30 cubic yards of lead-containing diatomaceous earth was generated per month.

3.6.3 Regulated Discharges

Wastewater Treatment Unit: The WWTU's 60,000-gallon holding basin and three 12,000-gallon neutralization basins were located outside in the southeast corner of the Site and were each constructed of concrete and coated with an acid-resistant epoxy material. The sodium hydroxide and reclaimed acid/water tanks were constructed of fiberglass. The holding and neutralization basins and the reclaimed acid/water tanks were constructed as flow-through process underground tanks and did not have secondary containment. The WWTU treated approximately 26 million gallons of water per year and was regulated under an industrial wastewater discharged permit issued by the Orange County Sanitation District (3-175).

Stormwater Retention Basin: The runoff flowed to the 380,000-gallon-capacity stormwater basin located in the northwest part of the site, except for runoff from the east lawn or the north parking lot. Stormwater collected in the retention basin flowed through a pipe along a natural course, through a filter, and into the Magnolia Avenue storm drain. The facility was covered under the State of California's General Storm Water permit (CA 0107093).

Air Emissions: The facility operated under air permits issued by the South Coast Air Quality Management District.

3.7 Spill History

During the Phase II Environmental Site Assessment (CRA, 2005), Site personnel were not aware of any reportable spills or releases associated with Site operations. No evidence of significant spills/releases was observed by CRA at the time of the Site inspection. The concrete floor of the Main Production Building was well maintained and was reportedly cleaned regularly. According to available facility personnel, only minor hydraulic oil releases and coolant water releases onto the concrete floor inside the building were reported to have occurred at the Site. This was consistent with observations made by CRA at the time of the Phase I Site inspection.

For the areas in which sulfuric acid was handled, the concrete floor was covered locally with of acid resistant bricks. This included the acid tank farm area, where the acid resistant brick showed signs of wear and standing liquid (acid with lead sludge) was observed (CRA, 2005).

CRA reviewed a 1990 letter from the Regional Water Quality Control Board (RWQCB) that indicated the elevated pH detected in the groundwater in the former monitoring well MW-1 installed to evaluate former used oil USTs on the west part of the site (SWMU No. 7) was the result of a sodium hydroxide release at the Site. Also, the results of the databases search, No Further Response Action Planned (NFRAP) report, indicates that there had been remedial actions conducted at the Site. Specific information pertaining to remedial action of these USTs is provided in reports by Dames & Moore, included in Appendix A.

In 1992 EPA Region IX personnel performed a Preliminary Assessment of the Site, and during interviews with facility workers it was indicated that a diesel spill occurred in 1986. The spill consisted of 14,000 gallons of diesel fuel No. 2 that traveled from the boiler room to the WWTU. The RWQCB supervised site cleanup.

3.8 Previous Site Investigations and Removal Actions

Environmental investigations were conducted at the Site between 1988 and 2005 to assess soil and groundwater quality at the Site. These investigations are summarized in the following subsections and copies of the reports are provided on a CD ROM disk included in Appendix A. According to Site personnel and Site records, various environmental investigations and assessments have been conducted at the Site. The following summarizes the historical documents of previous investigations provided and reviewed as part of this investigation:

- **Between 1988 and 1991, various documents were prepared by Dames & Moore for the remediation of the northwest area of the Site (Northwest Field)**

  These included the following:

  - November 1988: Report, Site Assessment and Remedial Action Plan, Delco-Remy Facility, Northwest Field and Storm Drain Ditch

  - October 1989: Revised Report, Evaluation of Remedial Action Alternatives and Selection of an Appropriate Alternative, Delco-Remy Site, Northwest Field Area

  - December 1989: Tank Closure Report (500-gallon gasoline UST), Delco-Remy Site, 1201 North Magnolia, Anaheim, California

- March 1991: Work Plan for Remedial Action, Delco-Remy Site, Northwest Field Area

- August 1991: Work Plan for Remedial Action, Delco-Remy Site, Northwest Field Area

- **August 1986: Report, Site Characterization and Remedial Action Plan prepared by Dames & Moore**

  This report documents that six underground storage tanks used for diesel fuel and used oil were investigated in two areas of the Site (UST Areas No. 1 and No. 2). Area No. 1 was located adjacent to the northwest corner of the Main Production Building and included four 19,000 gallon fuel oil tanks. Area No. 2 was located adjacent to the central portion of the west side of the Main Production Building, on the west side of the railroad spur and contained two 12,000-gallon used oil tanks. No contamination was detected in soil samples analyzed from Area No. 1. This report documents removal of the USTs from both areas.

- **August 1987: Report, Final Report-Soil Sampling-Tank Area 2 prepared by Dames & Moore**

  This report documents removal of petroleum hydrocarbon impacted soils from Tank Area No. 2, where used oil had been stored. The total petroleum hydrocarbons (TPH) impacted soils in Area No. 2 were investigated, excavated and hauled off-site under regulatory oversight.

  In July 1986, monitoring well MW-1 was installed near Area No. 2. This well was installed in a shallow groundwater zone encountered at a depth of approximately 30 feet below ground surface (bgs). No detectable TPH were found in the groundwater samples but pH values were reported as 9.0 and 9.6. Additionally, the water samples exhibited a cloudy brown color.

- **January 1989: Report, Soil Hydrocarbon Investigation, South End of Former Drainage Ditch, prepared by Dames & Moore**

  This report presents the results of a soil sampling and analysis program for the southern end of the former unlined storm drainage ditch located in the northwest section of the Site. This ditch was used to collect surface drainage resulting from precipitation. This unlined drainage ditch discharged to the Magnolia storm drain channel under an NPDES permit. In September 1988, during the course of lining the ditch, Delco-Remy excavated a few feet of soil containing elevated lead concentrations. During soil sampling conducted prior to lining the ditch, hydrocarbon odors and discoloration were observed. Soil samples were collected and analyzed. No benzene, toluene, ethylbenzene, and xylenes (BTEX) or diesel fuel range TPH were detected. However, total recoverable petroleum hydrocarbons (TRPH) concentrations ranging from 1,300 milligrams per kilogram (mg/kg) to 2,600 mg/kg were detected. It was concluded that the soils were impacted due to a past minor hydrocarbon spill and that soil deeper than 7 feet bgs was not impacted. The estimated volume of impacted soil was approximately 2 to 7 cubic yards.

- **August 1989: Report, Further Investigation of Groundwater Conditions prepared by Dames & Moore**

  This report documents the additional groundwater investigation activities conducted to assess the cause of discoloration of groundwater samples collected from monitoring well MW-1 at the Site. This assessment was conducted pursuant to a request made by the RWQCB, Santa Ana Region, dated May 15, 1989. .

  In July 1988, two additional monitoring wells (MW-2 and MW-3) were installed in areas several hundred feet to the northeast and southeast of MW-1. No TPH concentrations were detected and the pH values ranged from 7.36 to 7.42.

  To determine why the groundwater had a brownish color, groundwater samples were again collected from each of the three wells and analyzed for various parameters. It was discovered that the discoloration was due to dissolved natural organic substances (humic acids) present in the aquifer materials in the soil near MW-1.

- **December 1989: Report, Tank Closure Report (500-gallon gasoline UST), Delco-Remy Site, 1201 North Magnolia, Anaheim, California prepared by Dames & Moore**

  This report documents removal a former 500-gallon gasoline UST from the northwest part of the site. The removal, soil review and associated confirmation sampling was performed under the oversight of the Orange County Health Care Agency and Anaheim Fire Department. No impacts were observed by the agencies.

- . **July 1992: Final Report, Visual Site Inspection/Sampling Visit, prepared by PRG Environmental Management Inc.**

  PRG inspected the facility to evaluate SWMUs described in the August 1990 Preliminary Assessment report for Delco-Remy and listed in a scope of work outlined by the EPA in October 1991. Based on PRGs' review of these documents and the findings, 13 SWMUs were identified at the Site. All of the SWMU's identified by PRG were cross-referenced with the AOI numbers assigned by Haley & Aldrich in the Current Condition and Facility Investigation reports as shown on Figure 2. The SWMU numbers for the above-noted 13 SWMUs are listed below and cross-referenced with the AOI numbers assigned by Haley and Aldrich:

  - SWMU No. 1 (AOIs 22 and 47) - Wastewater Treatment Unit – lead-containing and corrosive wastewater

  - SWMU No. 2 (AOI 25) – New Hazardous Waste Storage Area in Warehouse No. 3 – operated as less than 90-day storage since 1983

  - SWMU No. 3 (AOIs 22 and 47) - Former Gondola Bin and Roll-off Bins – waste diatomaceous earth in south building

  - SWMU No. 4 (AOI 2) - Waste Lead Oxide Slurry Collection Channel in Main Production Building

  - SWMU No. 5 (AOI 2) - Former Vacuum Filter Machine in Main Production Building

- SWMU No. 6 (AOI 8) - Hydraulic Oil Collection Channels for Plastic Molding Machines in Main Production Building
- SWMU No. 7 (AOI 34) - Former Underground Waste Oil Storage Tanks (Area No. 2) west of Main Production Building
- SWMU No. 8 (AOI 11) - Battery QA/QC and Autopsy Area (a RCRA-regulated unit) in southwest part of Main Production Building
- SWMU No. 9 (AOI 5) - Soluble Oil Collection and Cleaning Area - formerly equipment wash down tank in north-center part of Main Production Building
- SWMU No. 10 (AOI 41) – Pump House for Oily Waste Collection and Cleaning Area - formerly equipment wash down tank west of Main Production Building
- SWMU No. 11 (AOI 43) - Former Defective Battery Storage Area west of Main Production Building
- SWMU No. 12 (AOI 48) - Former dead battery storage area in northwest field
- SWMU No. 13 (AOI 33) - Lead-Contaminated Steel Roll-Off Bin in northwest loading dock ramp area. This SWMU was identified during the Visual Site Inspection (VSI) following the 1990 Preliminary Assessment.

No new RCRA-regulated units were identified among the SWMUs identified during the VSI.

Additional information regarding the above-listed SWMUs is presented below.

SWMU No. 1 (AOIs 22 and 47): Wastewater Treatment Unit - Delco-Remy's WWTU was located at the southeast corner of the Site. The WWTU's primary components were an approximately 60,000-gallon fiberglass-lined concrete wastewater holding basin, three approximately 12,000-gallon fiberglass-lined concrete wastewater neutralization basins, and an aboveground sodium hydroxide tank. The WWTU treated acid- and lead-contaminated wastewater collected from various areas of the facility (DHS, 1989 and Delco-Remy, 1992).

The WWTU was used to neutralize and precipitate metals from the influent wastewater. Precipitated metals (mostly lead) were collected from the clarifier sludge through the filter press. Filter press solids were collected in plastic-lined cardboard boxes and sent to RSR Quemetco for reclamation. Treated water was discharged to the Orange County sanitary sewer system once the discharge met publicly owned treatment works (POTW) requirements regulated under an industrial wastewater discharged permit issued by the Orange County Sanitation District (3-175) (DHS, 1989 and Delco-Remy, 1992).

SWMU No. 2 (AOI 25): Hazardous Waste Storage Area - This hazardous waste storage area was located inside of Warehouse No. 3 along the north-center part of the east wall. The hazardous waste storage area was constructed of sealed concrete and was divided by epoxy-lined trenches into three areas including one waste storage area and two virgin product storage areas, measuring approximately 10 feet by 15 feet each, with a grated epoxy-lined trench around the perimeter. Wastes and virgin products stored in this area were contained in 55-gallon drums and may have included paint-related wastes, oil-contaminated items and drums of new oil (Delco-Remy, 1992).

SWMU No. 3 (AOIs 22 and 47): Former Gondola Bin and Roll-off Bins - The gondola bin and roll-off bins were taken out of use when the new wastewater treatment system was installed in February 1991. During the years when diatomaceous earth was used to filter wastewater, contaminated diatomaceous earth was placed into an indoor gondola bin, which was periodically placed into two larger plastic-lined, 20-cubic-yard roll-off bins (Delco-Remy, 1992).

SWMU No. 4 (AOI 2): Waste Lead Oxide Slurry Collection Channel - Waste lead oxide slurry, generated from the battery plate pasting operations, was directed to a grated concrete channel that surrounded each battery plate pasting machine. The slurry from the concrete channel was pumped through a filter press similar in design to the filter press in the WWTU. Solids generated from the filter press were sent off-site for lead reclamation. Residual liquids remaining after pumping the waste lead oxide slurry through the filter press were directed to the WWTU (Delco-Remy, 1992).

The filter press replaced the less efficient vacuum filter machine (SWMU No. 5) that was formerly used to filter solids from the waste lead oxide slurry (Delco Remy, 1992).

SWMU No. 5 (AOI 2): Former Vacuum Filter Machine - The vacuum filter machine was replaced by a filter press in July 1991. As noted in the description of SWMU No. 4, the waste lead oxide slurry collection channel, the vacuum filter machine was formerly used to filter solids from waste lead oxide slurry generated in the facility's battery plate pasting department (Delco-Remy, 1992).

SWMU No. 6 (AOI 8): Hydraulic Oil Collection Channel - Epoxy-coated and grated concrete channels surrounded the plastic battery case molding machines known as "Cincinnatis" (after the Cincinnati, Ohio-based company that manufactured the machines). The concrete channels collected hydraulic oil and water that may have leaked from the plastic molding machines (Delco-Remy, 1992).

SWMU No. 7 (AOI 34): Former Underground Used Oil Storage Tank Area No. 2- Located west of the Main Production Building and railroad tracks this area contained two 12,000-gallon underground storage tanks (USTs). Originally these tanks were used to store sodium hydroxide but were converted to store waste flux oil for rubber products in 1979. These tanks were removed in July 1986 under a permit issued by the Orange County Health Care Agency (OCHCA). Confirmation sampling was performed by Dames & Moore. A concrete pad up to 2-feet thick with slurry sidewalls was constructed prior to installation of the USTs and it is currently still in place at this location (D&M, 1985 & Delco Remy, 1992). Testing of samples from borings found hydrocarbon impacts approximately two feet thick beneath the tanks but did not find significant lateral migration. In December 1986, remedial excavation of impacted soils was performed to a depth of 21 feet bgs under oversight of OCHCA. Testing of confirmation samples found low levels of toluene and TPH but levels remaining were below the OCHCA action levels. Benzene, xylenes and chlorinated solvents were not detected in confirmation samples. One of the more impacted confirmation samples was tested for lead, and found to only contain 3.3 mg/kg of lead (Dames & Moore, 1987).

SWMU No. 8 (AOI 11): Battery QA/QC and Autopsy Area - The battery quality assurance and quality control (QA/QC) and autopsy area was located in the southwest part of the Main Production Building. During battery tests and autopsies, batteries were placed on a PVC-coated workbench, the tops were cut off, and the acid was drained into a PVC-lined sink, which drained to the WWTU. The batteries were then examined to determine why they failed. After examination, the plastic battery tops were banded back in place and the batteries were stored on wooden pallets on the concrete floor near the battery autopsy area and later moved outside to another storage area on the west side of the site (SWMU No 11) prior to shipment off-site for reclamation (PRC, 1992).

SWMU No. 9 (AOI 5): Soluble Oil Collection and Processing Tanks - The soluble oil collection and processing tanks were part of a soluble oil collection and processing system located in the north-west part of the Main Production Building to reclaim spent soluble machine oils from on-site manufacturing equipment. Spent soluble machine oils were transferred to the 6,000-gallon aboveground used oil storage tank (located east of Warehouse No. 3) prior to shipment off-site for reclamation (PRC, 1992).

During the VSI, four empty polyethylene plastic tanks were present in the proposed collection and processing area. Two of the empty tanks had an approximate capacity of 500 gallons each and were located within polyethylene containment structures. The other two empty tanks had an approximate capacity of 100 gallons each (Delco-Remy, 1992).

SWMU No. 10 (AOI 41): Oil Pump House/ Oily Waste Collection and Cleaning Area (Formerly Equipment Wash Down Tank) - The oil pump house/equipment wash down tank identified as SWMU No. 10 (PRC, 1992) refers to an enclosed equipment washing and used oil transfer area known as the "oil house" and the 6,000-gallon aboveground used oil storage tank. The oil house consisted of an approximately 300-square-foot sealed concrete area with a grated sump around the perimeter. The concrete area and sump were covered by a corrugated aluminum structure. The oil house was divided in half by a grated sump and a corrugated aluminum dividing wall (Delco-Remy, 1992).

One side of the oil house consisted of a spray washing area for cleaning oil-contaminated equipment. The opposite side contained an approximately 150-gallon used oil transfer tank that held used oils generated by the facility's manufacturing equipment. Used oil deposited in the transfer tank was periodically pumped into the 6,000-gallon used oil storage AST located adjacent to the east side of the oil pump house (Delco-Remy, 1992).

SWMU No. 11 (AOI 43): Former Defective Battery Storage Area - Defective batteries evaluated in the battery autopsy were temporarily stored indoors on pallets, adjacent to the battery autopsy area, and periodically moved to an outside storage area located on the west side of the Main Production Building in an area between the manufacturing building and Warehouse No. 3, on the west side of the cooling tower (Ecology and Environmental, Inc. [E&E], 1990) (Appendix A). These defective batteries were shipped to RSR Quemetco for lead reclamation (Delco-Remy, 1992).

SWMU No. 12 (AOI 48): Northwest Field - The northwest field at the Site refers to an open field located in the northwest corner of the Site. The northwest field is bordered by the Site property line fence on the north and west sides, the former Southern Pacific railroad spur on the east, and a fence separating the field from the former manufacturing area on the south. The Site's storm water retention basin, which receives runoff from the Site, is located in the southwest corner of the northwest field. Prior to construction of the storm water retention basin, runoff from the Site followed a drainage ditch on the west side of the northwest field, at the present location of the storm water retention basin (E&E, 1990).

In the past, elevated concentrations of lead were detected in surface soils obtained from the northwest field drainage ditch area. Soil samples analyzed by the California Waste Extraction Test [WET] method for soluble lead prior to excavating the Site for the construction of the stormwater retention basin were reported to have soluble concentrations of lead up to 39.6 milligrams per liter [mg/L] (Dames and Moore, 1989). The lead impacts in the northwest field were attributed to sulfuric acid containing lead leaking from the dead and defective lead acid batteries stored in this area up until the early 1970s (E&E, 1990). This area was later remediated by Delphi.

During May and August 1989, lead-impacted soil was removed from the northwest field drainage ditch and basin area. Confirmation soil sampling to confirm that the impacted soil had been removed along the ditch was performed under the oversight of the Orange County Health Care Agency's Environmental Health Unit. Excavated soils were chemically treated on-site using an Ensotech system to convert heavy metals into insoluble silicates. After analytical results demonstrated that the soils were no longer impacted, approximately 3,000 cubic yards of treated soil were sent to a Class 3 landfill. According to the Orange County Health Care Agency, soil remediation efforts thus far had addressed the western half of the northwest field (E&E, 1990). According to Delco-Remy's consultant, Dames and Moore, a lead-impacted area measuring approximately 300 feet by 18 feet still remained along the eastern side of the northwest field (Dames and Moore, 1989). This area is believed to be due to the presence of pipelines that were active at that time.

During the VSI, a pile of soil was observed on the north end of the northwest field. According to a Delco-Remy representative, these soils were identified as clean fill excavated during the stormwater retention basin construction. Lead levels in these soils were reportedly low (less than 5 mg/l by the California WET method). The decision to store these soils on-site was made in conjunction with Orange County Health Care Agency (Delco-Remy, 1992).

SWMU No. 13 (AOI 33): Lead-Contaminated Steel Roll-Off Bin - A roll-off bin used for temporary storage of lead–impacted steel prior to off-site disposal was the only SWMU identified during the VSI that was not identified in the Preliminary Assessment. On an occasional basis (up to once per year), an approximately 20-cubic-yard-capacity steel roll-off bin used for temporary storage of lead-impacted steel parts and equipment was placed outside of the northwest corner of the Main Production Building, between the building and the railroad tracks. These wastes were generated from repair or replacement of lead acid battery manufacturing equipment. The steel roll-off bin was constructed of steel and lined with plastic sheeting (Visqueen). When full, the bin was picked up by an outside vendor for use as scrap metal and another bin dropped off in its place. Although a definite start-up date could not be determined, the practice of occasionally using a roll-off bin in this location began in the early 1980s (Delco-Remy, 1992). According to Ken Rayle, former facility environmental manager, the roll-off bin was used for several years. There have been no documented releases of hazardous wastes or hazardous constituents from the roll-off bin and no documented liquids or sludges were deposited in the bin.

- **January 1999: Draft Soil Remediation Closure Report, Northwest Field prepared by ENV America Incorporated**

  Between 25 and 31 August 1998, soils were excavated from the northwest field. The reason for the excavation was the presence of elevated lead in the shallow soils. Lead had been detected at concentrations ranging from 38 mg/kg to 9,850 mg/kg. The soil cleanup goal for this activity was 1,000 mg/kg. For each location excavated, confirmation soil samples were collected at depth to confirm removal of the lead-impacted soil above the remedial criteria. A total of 1,108 tons of soil were reportedly excavated and shipped to the Laidlaw Environmental Services/Safety-Kleen, Lone Mountain Facility in Waynoka, Oklahoma (ENV America 1999). Figure 8-12 presents the confirmation and delineation sample results for this investigation.

- **April 2003: Environmental Liability Assessment, prepared by Harding ESE, a Mactec Company**

  Delphi contacted Harding ESE to conduct a liability assessment of the Site to identify significant recognized liabilities at the Site. This assessment identified the following liability:

  - Soil Removal in the Area of the Storm Water Retention Basin - Lack of confirmatory samples for a 1996 soil removal program.

  Five potential areas of liability (PAOL) were also identified. These include:

  - Acid mixing room
  - Unknown piping labeled "Flammable Gas"
  - Used oil and new oil storage areas
  - Hazardous waste storage areas
  - Asbestos in building materials

  These potential areas of concern are discussed further in other sections of this report.

- **November 2004: Phase I Environmental Site Assessment, Delphi Corporation, Anaheim Battery Operations, 1201 N. Magnolia Ave., Anaheim, California, prepared by Conestoga-Rovers & Associates**

  CRA performed a Phase I Environmental Site Assessment of the Site in conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E1527 00 (CRA, 2004). This assessment was performed before the battery operations had ceased and identified the existing and historical RECs listed below:

  Leaking Underground Storage Tanks (LUSTs) (AOIs No. 33 and 34): According to Site reports reviewed by CRA, six USTs were removed in 1986 from two areas of the Site. The database information from the EDR indicates the USTs are listed as closed; however, no information was available for CRA to review.

Former Lead Reclamation Area (AOI 16): Until the mid-1980s, scrap lead was reclaimed in the area now occupied by the hazardous waste storage area located in the northwest corner of the Main Production Building. The concrete floor in this area showed wear and cracking.

Above Ground Storage Tanks (ASTs) (AOIs No. 22 and 24): The acid ASTs were situated on top of acid resistant bricks that sat on top of the concrete slab. While secondary containment for spilled liquids was present, there was a significant amount of liquid pooled around the base of the tanks. Based on the condition of the bricks, the potential for a release from this area was identified.

Raw Material and Chemical Use and Storage (AOIs No. 1 through 8 and 13): At several locations within the production area, acid was drained and refilled in the individual batteries. This was done in areas where the floor was covered with acid resistant bricks. Based on observations during the Site inspection, the integrity of these bricks was questionable, with an associated risk for release.

Battery Charging Tables (AOIs No. 14 and 23): There were battery charging tables with underflow ventilation trenches in the south end of the Main Production Building and center of the south charging building. Around each of these tables, concrete cracks were observed along with sulfuric acid residue buildup.

Oil Processing Area (AOIs No. 30, 33, 41 and 42): Used oils were transferred from the production area to the used oil processing building via transport carts. Carts were then dumped into the used oil handling sump from which it was pumped through a particle separator and then to the holding tank. The integrity of the sump in AOI 41 could not be determined during the Site inspection. This area was later observed and sampled during the FI and demolition oversight.

Solid Wastes (AOI No. 30): According to Site personnel and as observed by CRA, dry sweeper material from the cleaning of the outside pavement areas had been dumped in the northwest area of the Site, adjacent to the former gravel truck parking area. This material has been reportedly removed and properly disposed of off-Site. However, it was concluded that these sweepings contained minor amounts of lead which may have impacted Site soils.

Spills/Releases of Lead Dust (AOIs No. 48, 49, 50, 51 and 52): Releases of lead oxide may have occurred at the Site. The extent to which these releases have impacted soil was not identified during the Phase I but were investigated during the CCR and FI.

All of these RECs were investigated during the CCR and FI.

- **March 2005: Phase II Environmental Site Assessment, Delphi Corporation, Anaheim Battery Operations, 1201 N. Magnolia Ave., Anaheim, California, Conestoga-Rovers & Associates**

  A Phase II ESA field investigation was designed to collect additional data to evaluate five of the eight RECs (CRA, 2005). The Phase II ESA field activities were